REMARKS

Applicant has thoroughly considered the Examiner's remarks, but respectfully disagrees and requests further reconsideration of the application in light of the following remarks. Claims 1, 7, 9-11, 17, 19, and 20 have been amended by this Amendment A. If the Examiner feels, for any reason, that an interview will expedite prosecution of this application, applicant invites the Examiner to telephone the undersigned attorney. Claims 1-20 are presented in the application for further reconsideration.

Claims 1-20 stand rejected under 35 U.S.C. 102 (b) as being anticipated by U.S. Patent No. 4,930,600 to Kumar et al. (Kumar '600). However, a claim is anticipated only if each and every element as set forth in the claim is disclosed, either expressly or inherently, in a single prior art reference. Verdegal Bros. v. Union Oil. Of California, 814 F.2d 628, 631 (Fed Cir.1987). Applicant submits that each and every element as set forth in claims 1-20 is not found, either expressly or inherently, in Kumar '600. Thus, the cited reference does not anticipate the claimed invention.

Kumar '600 discloses an on-board rail/wheel lubrication system for lubricating each rail of a railroad track. In particular, Kumar discloses that flanged lubrication wheels are maintained in continuous contact with respective rail gage sides in a tangential manner to reduce the wheel/flange friction coefficient as well as the force with which the flange presses against the rail gage side. (See Kumar '600, column 2, lines 57-59). Kumar '600 further discloses that the amount of lubricant applied by each of the lubrication wheels is controlled by a microprocessor and operational parameters of the train such as train size, angle of attack of the wheels on the rail, train speed, temperature, humidity and rheological characteristics of the lubricants being used. (See Kumar '600, column 3, lines 8-13). Although Kumar '600 discloses a system for controlling the application of lubricant to the rails of a railroad track, it fails to teach or suggest each and every aspect of the claimed invention.

As described in the present application, conventional lubricating systems are not configured to provide an indication to the operator when a friction modifying agent (or lubricant), such as sand, being applied to the rails has run out. Rather, in conventional lubricating systems, storage containers, such as sandboxes, are periodically inspected to determine the level of the friction modifying agent. Based on the periodic inspection, the storage containers (e.g., sandboxes) are filled if needed. However, if sand runs out between

inspections, there is no indication to the operator. (See application page 2, paragraph 0006). In addition, if a nozzle delivering the friction modifying agent, or any of the piping is blocked, delivery of the friction modifying agent can be adversely affected. Such problems can result in a locomotive not producing enough tractive effort and may cause train stall and undue delays for a whole railroad system. Id. The present invention provides a solution to such problems by disclosing a system that not only controls the amount of a friction modifying agent (i.e., lubricant) applied to the rails of a railroad track, but further monitors and assesses the effects of an attempted application of the friction modifying application. (See application, page 7, paragraph 0027). In other words, the present invention determines if the friction modification agent was actually delivered to the wheel-rail interface as intended.

According to the present invention, a controller is responsive to input from a sensor to determine a per unit creep of each axle of the locomotive to determine if the applicator is working appropriately. (See application page 3, paragraph 0007, and page 7, paragraph 0027). The creep of an axle is the difference in speed of a wheel associated with the axle and the locomotive, and per unit creep is the ratio of creep to locomotive speed. (See application page 7, paragraph 0027). The controller also determines a tractive effort of the axle of the locomotive and determines a friction modifying applicator state for the applicator (e.g., whether the applicator is activated or not activated to apply a friction modifying agent) associated with the axle, and compares the determined per unit creep of the axle, the tractive effort of the axle and the state of the friction modifying applicator associated with the axle to a predetermined value indicative of the health and functionality of the locomotive friction modifying system. By comparing the determined per unit creep to characteristics associated with sand state changes that indicate expected tractive efforts resulting from applying the sand, the present invention provides an indication of whether the friction modifying applicator is working properly. Thus, by recognizing the relationship between per unit creep and rail adhesion (See FIGS. 3, and 4), applicant has developed a system that provides an indication to an operator whether an attempted friction modification application was actually delivered.

To this end, claim 1 recites, in part a system for assessing a health and functionality of a locomotive friction modifying system that includes "a controller associated with the sensor and responsive to input from the sensor for determining a per unit creep of an axle of the locomotive..., and comparing the determined per unit creep ... to a predetermined value indicative of whether the friction modifying agent is being applied to the rail and providing an

indication of whether the friction modifying agent is being applied to the rail." Claim 11 recites a method for assessing a health and functionality of a locomotive friction modifying system that includes, in part, "determining a per unit creep of an axle of the locomotive," and "comparing the determined per unit creep of the axle.... to a predetermined value indicative of whether the friction modifying agent is being applied to the rail and providing an indication of whether the friction modifying agent is being applied to the rail." Kumar '600 fails to teach or suggest determining a per unit creep of an axle of the locomotive, comparing the determined per unit creep of the axle to a predetermined value indicative of whether the friction modifying agent is being applied to the rail, or providing an indication of whether the friction modifying agent is being applied to the rail. Accordingly, Kumar '600 fails to anticipate amended claims 1 and 11.

The Office asserts that the system of Kumar '600 undergoes a self test to ensure the operation and communication of the device and that part of the self check includes reading data constants. The self test described in Kumar '600 is a system initialization process that occurs at system "power up" that involves verifying whether proper communication is taking place between the various system components (e.g., sensors, data storage devices, and pump systems, etc.). (See Kumar '600, column 7, lines 9-15). However, there can be proper communication between the components of the system even though a supply of friction modifying agent (e.g., sand) has been depleted, or a sand nozzle or any of the piping is blocked. Thus, even with proper communication between the components of the system, the operator may not be aware of supply and blockage problems until the next physical inspection.

The Office further asserts that reading data constants, as disclosed in Kumar '600, implies comparing collected data against constant data (see Office action at page 2). Kumar '600 discloses that after the lubrication system power ups and executes the self test, the system then reads a plurality of the data constants. Thereafter, the lubrication system cycles through six decision parameters, which involves comparing collected data to the read data constants to determine whether to stop lubricant pumps or to adjust lubrication pump rates. (See Kumar '600, column 7, lines 12-67 and column 8, lines 1-14). In other words, the lubricating system of Kumar '600 determines how much, if any, lubricant to apply to the rails. In contrast, the present application discloses a system that provides an indication of whether the friction modifying agent is being applied to the rail, by determining a per unit creep of an axle of the

locomotive, and comparing the determined per unit creep of the axle to a predetermined value indicative of whether the friction modifying agent is being applied to the rail. In fact, the present invention could be used to provide an indication whether an amount of lubricant determined by the lubrication system of Kumar '600 was actually applied to the rail. Nevertheless, Kumar '600 fails to teach or suggest determining a per unit creep of an axle of the locomotive, and providing an indication of whether the friction modifying agent is being applied to the rail, and, thus, fails to anticipated the claimed invention.

SUMMARY AND CONCLUDING REMARKS

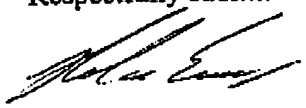
In view of the foregoing, applicant submits that amended claims 1 and 11 are allowable over the cited art. The remaining dependent claims are believed to be allowable for at least the same reasons as the independent claims from which they depend.

It is felt that a full and complete response has been made to the Office action, and applicant respectfully submits that pending claims 1-20 are allowable over the cited art and that the subject application is now in condition for allowance.

The fact that applicant may not have specifically traversed any particular assertion by the Office should not be construed as indicating applicant's agreement therewith.

Any required fees or overpayments should be applied to Deposit Account No. 07-0846.

Respectfully submitted,



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